CLAIMS:

1. A light source control system comprising:

at least one light source, each light source emitting a light signal at a discrete frequency and a reference signal at the discrete frequency;

a photodetector optically coupled to the light source, the photodetector designed to receive the light signal; and

at least one lock-in system coupled to the photodetector and each light source, each lock-in system receiving the light signal from the photodector and receiving the reference signal from the light source;

wherein each lock-in system produces an intensity value of the light source based on the light signal and the reference signal.

2. The apparatus of claim 1 wherein each light source comprises:

a control unit; and

a colored light source designed to receive a drive signal from the control unit and produce the light signal based on the drive signal.

3. The apparatus of claim 2 wherein the control unit is designed to receive a clock signal and a power signal, produce the reference signal at the discrete frequency based on the clock signal, and produce the drive signal based on the reference signal and the power signal.

4. The apparatus of claim 1 wherein the photodetector comprises a single-junction photodiode.

5. The apparatus of claim 1 wherein the intensity value is the intensity of the light signal at the associated discrete frequency.

6. The apparatus of claim 1 wherein each lock-in system comprises:

a frequency multiplier; and

a filter, the filter coupled to the frequency multiplier;

wherein the intensity value is the product of the received light signal and the reference signal processed through the frequency multiplier, and filtered to remove non-dc portions.

7. The apparatus of claim 6 wherein the filter is a low-pass filter.

8. The apparatus of claim 1 wherein the photodetector comprises a multi-junction photodiode.

9. The apparatus of claim 8 wherein each junction of the multi-junction photodiode receives a portion of the light signal, the portion of the light signal received based on an associated spectra of the light signal.

10. The apparatus of claim 9 wherein the at least one lock-in system comprises a plurality of lock-in devices, each lock-in device coupled to the photodetector to receive a portion of the light signal.

11. The apparatus of claim 10 wherein each lock-in device comprises:

a frequency multiplier; and

a filter, the filter coupled to the frequency multiplier;

wherein a partial intensity value is produced from the product of the portion light signal received by the lock-in device and the reference signal processed through the frequency multiplier, and filtered to remove non-dc portions.

12. The apparatus of claim 11 wherein the intensity value is the sum of the partial intensity values.

13. The apparatus of claim 11 wherein the filter is a low-pass filter.

14. A method for sensing intensity of a light source:

emitting at least one light signal, each light signal emitted at a discrete frequency;

transmitting a reference signal associated with each of the light signals at the associated discrete frequency; and

producing an intensity value based on the light signal and the associated reference signal.

15. The method of claim 14 wherein emitting the light signal comprises:

receiving a clock signal;

receiving a power signal; and

producing the light signal based on the clock signal and the power signal.

16. The method of claim 14 wherein transmitting the at least one reference signal comprises:

receiving a clock signal; and

producing the reference signal based on the clock signal.

17. The method of claim 14 wherein producing the light signal comprises:

receiving the light signal into a lock-in system;

multiplying the light signal by the associated reference signal; and

filtering non-dc portions from the multiplied signal.

18. The method of claim 17 wherein receiving the light signal comprises:

collecting the light signal with a photodetector; and

passing the collected light signal to the lock-in system.

19. The method of claim 17 wherein receiving the light signal comprises:

collecting a first portion of the light signal with a first portion of the photodetector;

collecting a second portion of the light signal with a second portion of the photodetector;

passing the first portion of the light signal to a first lock-in device within the lock-in system; and

passing the second portion of the light signal to a second lock-in device within the lock-in system.

20. The method of claim 19 wherein producing the light signal further comprises:

summing the first portion of the filtered light signal and the second portion of the filtered light signal.

21. A system for sensing intensity of a light source:

means for emitting at least one light signal, each light signal emitted at a discrete frequency;

means for transmitting a reference signal associated with each of the light signals at the associated discrete frequency; and

means for producing an intensity value based on the light signal and the associated reference signal.